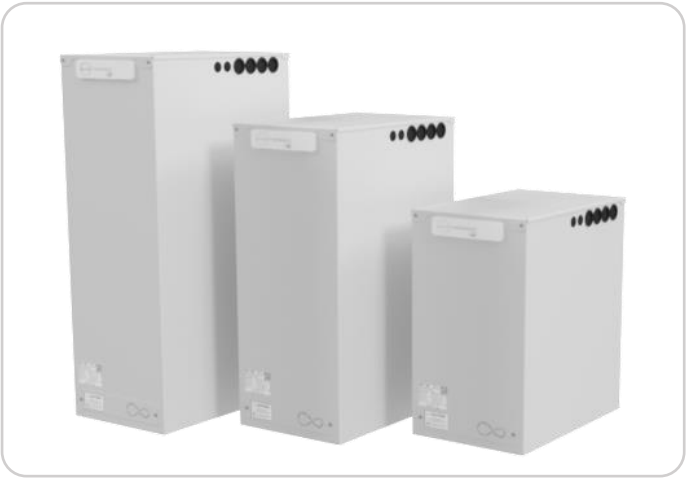
Thermino® xPlus with Heat Pumps – Wiring & Settings (D0086)



NOTICE

Please read & understand all these instructions before commencing installation.

Failure to install and operate this system in accordance with these instructions will invalidate the manufacturer's warranty.

Please leave this manual with the customer for future reference.

CONTENTS

1. INTRODUCTION

1.1 GENERAL

The following instructions provide guidance for the installer and end-user of Thermino® xPlus Heat Batteries when used with compatible Heat Pumps.

These instructions must be read in conjunction with the Installation and User Instructions Manual for the Thermino xPlus (D0084) product.

All installations must be carried out by a competent installer in accordance with local codes and regulations for plumbing, electrical installations and potable water supply.

1.2 SYMBOLS USED

In these instructions the following symbols are being used to draw the user's attention to information of particular importance.

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury or material damage.

NOTICE
Signals information that is considered important but not hazard related.

1.3 ABBREVIATIONS

The following abbreviations are used throughout the manual:

- AC – Alternating Current
- dT – delta T (change in Temperature)
- DHW – Domestic Hot Water
- HP – Heat Pump
- kW – Kilo Watt
- PCB – Printed Circuit Board
- PVC – Polyvinyl Chloride

2. SAFETY

2.1 GENERAL SAFETY NOTICES

WARNING

Only competent persons suitably qualified to carry out plumbing and electrical work may undertake installations, repairs or relocations of the appliance.
Product training on the full range of Thermino Heat Batteries is available from Sunamp or authorised training partners.

WARNING

Risk of electric shock – potential dual supply. Always isolate the power supplies to the Heat Battery controller before working on the Heat Battery.

CAUTION

These instructions must be read in conjunction with the Installation and User Instructions for the Thermino xPlus (D0084) products.

CAUTION

Do not operate the immersion heater until all heat exchanger circuits have been filled and the plumbing has been appropriately commissioned.

3. HEAT PUMP SIZING GUIDELINE

This section details the sizing guidance for the Thermino xPlus range of products with Heat Pumps. Its purpose is to assist and offer a guideline for choosing the correct size of Thermino xPlus Heat Battery to Heat Pump Capacity and promote sizing.

The graph below details the relationship between Flow Rate (l/min) and Power (kW) at dT's of 5 and 7, which are the most common range of operation for heat pumps used in Domestic Hot Water (DHW) mode.

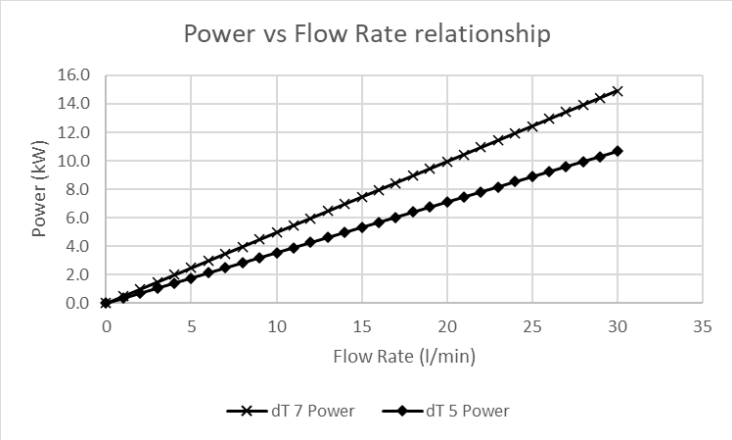


Figure 1 – Power vs Flow Rate relationship

The Thermino xPlus Heat Batteries work to an ideal recommended flow rate for charging via Heat Pumps as detailed in the Installation Manual (D0084 – Table 1). Therefore, the following compatibility table can be used as a sizing guide between Heat Pump Capacity and Heat Battery size:

Heat Battery Size	Heat Pump Capacity Range (kW)			
	(3 to 5)	(5.5 to 7.5)	(8 to 10.5)	(11 to 14)
Thermino 150 xPlus	o	o	o	Δ
Thermino 210 xPlus	!	o	o	Δ
Thermino 300 xPlus	!	!	o	o
! – Caution: Special consideration must be given to heat up and reheat times when combining low powered heat pumps with high capacity heat batteries. o – fully compatible sizing. Δ – compatible with the use of an Autobypass valve to ensure the flow rate of the heat pump is within the recommended flow rate for the Heat Battery sizing.				

Table 1: Heat Battery size and Heat Pump capacity compatibility

The Autobypass valve is always recommended in installations with Thermino xPlus Heat Batteries as it also assists in the Heat Pump's defrost condition requirements.

AE – AMITIME PAVH-08V1GFB R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "AE01" & "AE02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures AE.1 & AE.2 below)
- Heat Pumps from the Amitime PAVH-08V1GFB range

AE.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the TW terminal of the Amitime indoor controller (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures AE.1 & AE.2 below for reference.

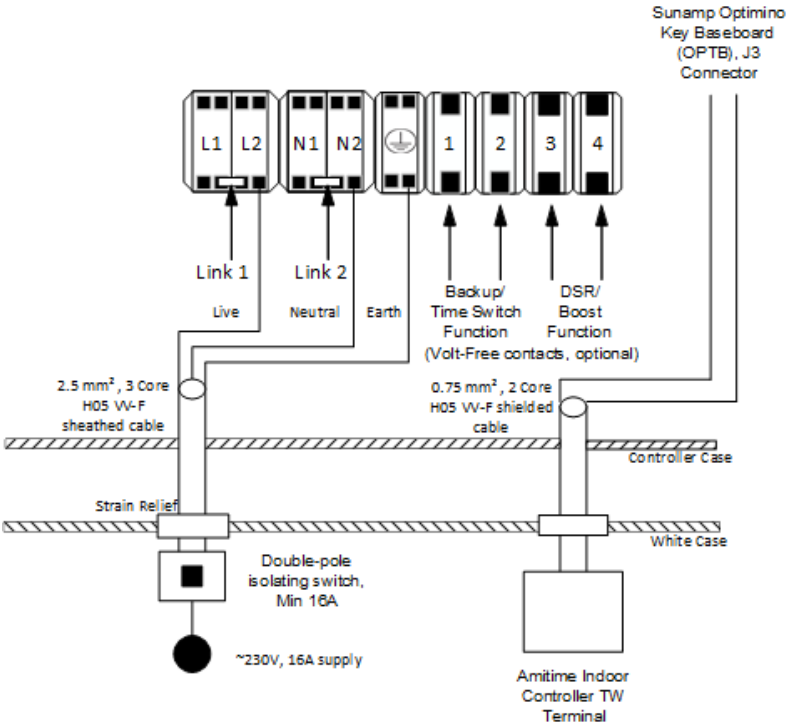


Figure AE.1 - Thermino xPlus with AE01 Optimino key

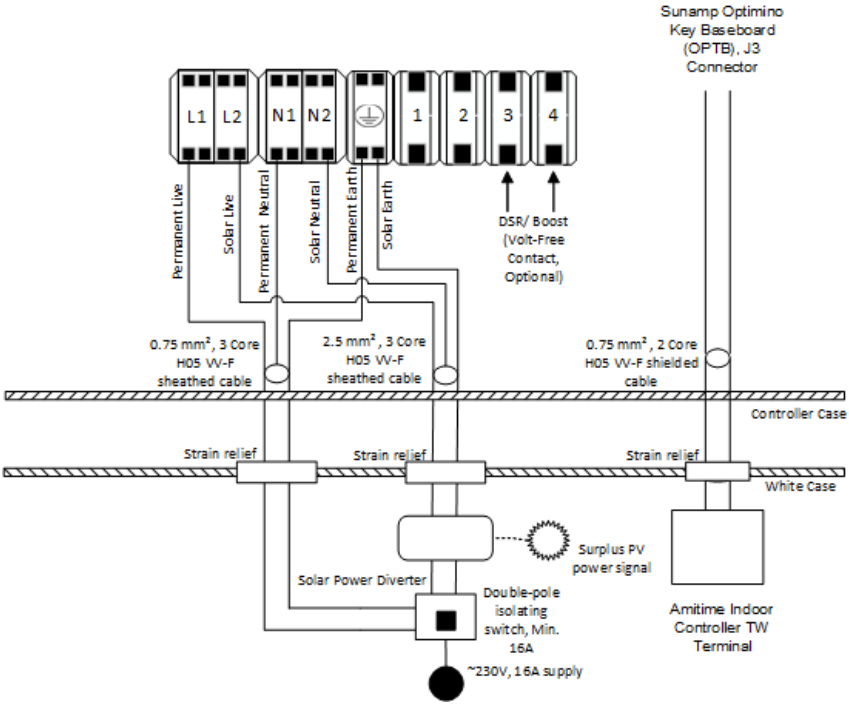


Figure AE.2 - Thermino xPlus with AE02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

AE.2 AMITIME PAVH-08V1GFB CONTROLLER SETTINGS

In the Main menu of the Amitime Indoor controller, apply the following settings to the functions listed below:

Function	Setting
Setpoint DHW	65°C

Table AE.1: Amitime PAVH-08V1GFB controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

BH - BOSCH COMPRESS 5800I AW R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

NOTICE
If installing a Thermino xPlus with a Bosch Compress Heat Pump in Germany, the **Bosch Compress 6800i AW R290** must be used instead. This is due to a flow temperature limitation applied to the Compress 5800i AW model in this market. Please always confirm that the product you are installing is not restricted to maximum flow temperatures below 65°C.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "BH01" & "BH02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures BH.1 & BH.2 below)
- Heat Pumps from the Bosch Compress 5800i AW R290 range

BH.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Indoor Unit controller PCB Terminal – (TW1 – DHW Storage Temperature) (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures BH.1 & BH.2 below for reference.

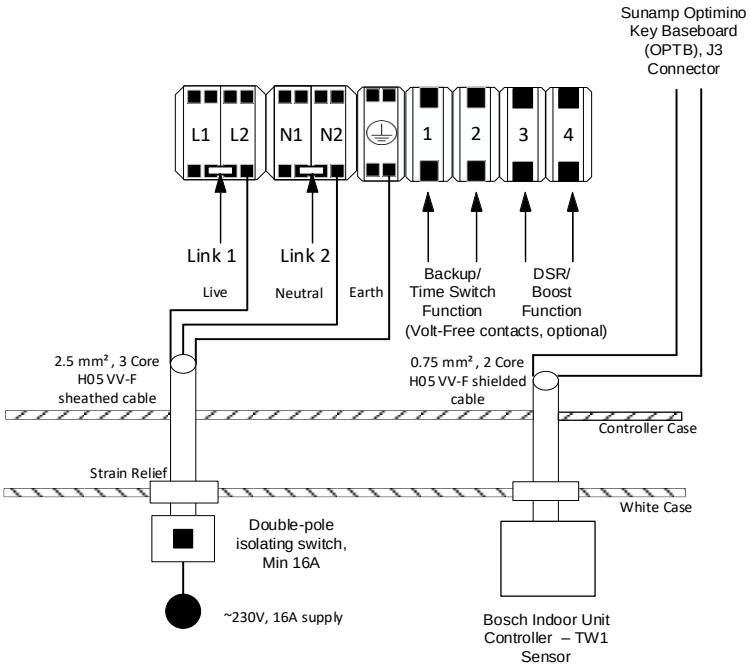


Figure BH.1 - Thermino xPlus with BH01 Optimino key

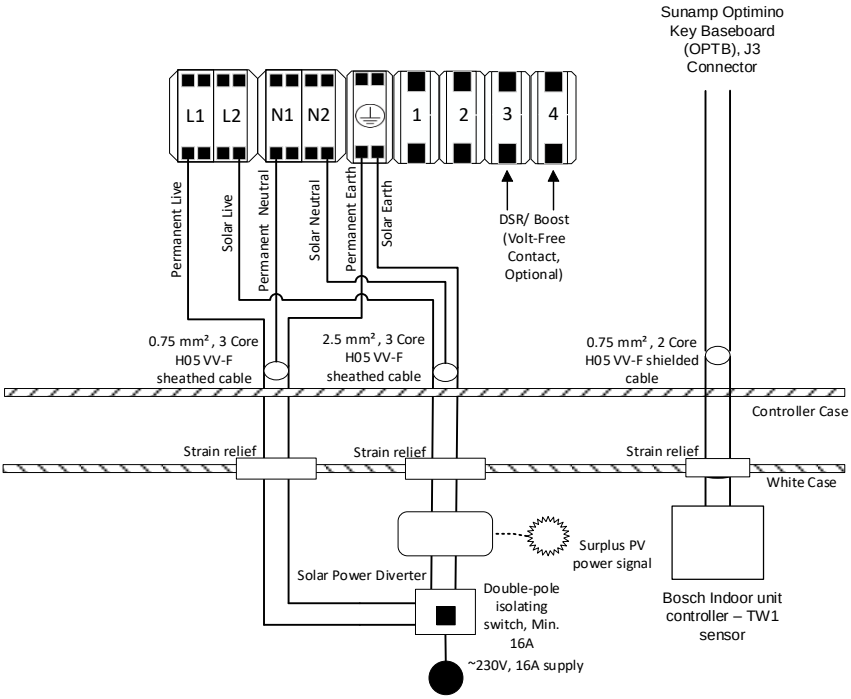


Figure BH.2 - Thermino xPlus with BH02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

BH.2 BOSCH HEAT PUMP CONTROLLER SETTINGS

In the Main menu on of the Indoor Unit controller, apply the following settings to the functions listed below:

Function	Setting
Aux Heater Block	On
PW2 Circulation Pump Installed	Off
DHW Operation Mode	Comfort
Comfort Start Temp	60°C
Comfort Stop Temp	65°C
Comfort temp. difference for charging	13K
Thermal Disinfection	Off
Daily Heat Up	Off

Table BH.1: Bosch Compress 5800i AW settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

DN – DAIKIN 3H HT R32 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "DN01" & "DN02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures DN.1 & DN.2 below)
- Heat Pumps from the Daikin Altherma 3H HT R32 range

NOTICE

Please note that the Daikin 3H HT R32 heat pump range may not be able to fully charge Thermino xPlus Heat Batteries under all conditions. The use of the automated back-up heating function may be required to reach full charge. This requires the installation of a jumper cable (Link 3) to be placed between FT and 0V at connection J3 on the controller PCBA. This will activate a 45-minute timer during which the HP will operate, followed by the HP switching OFF and the back-up heating element coming ON (after a 5-minute timer) to complete charging the Heat Battery to full charge.

NOTICE

Installing Link 3 will activate the back-up heating element inside the Heat Battery after a 45-minute timer. Please note that this will stop the Heat Battery being charged in Heat Pump mode. This can lead to increased electricity consumption, resulting in higher energy costs. This should be explained to the end user.

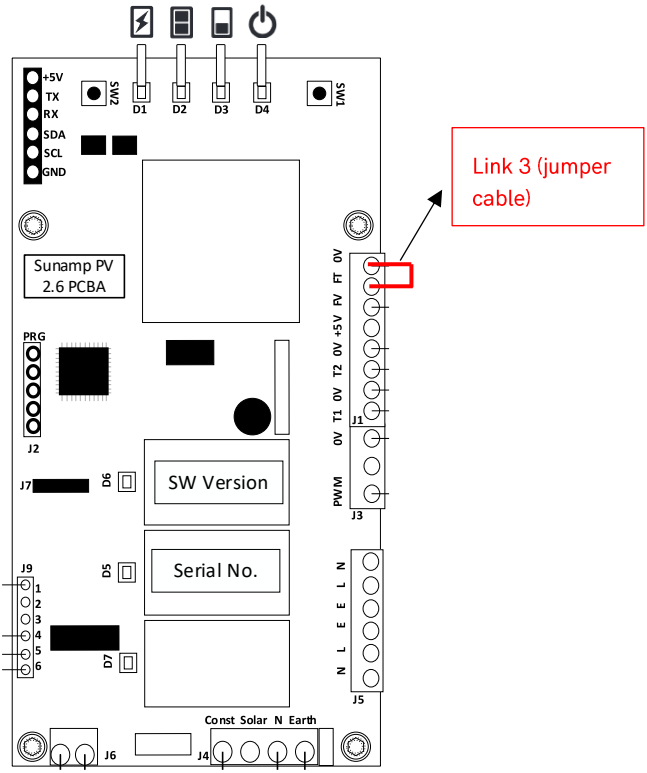


Figure DN.1 – Link 3 installed between FT and 0V at connection J3 on the controller PCBA

DN.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino key baseboard (OPTB) – terminal J3 into the Heat Pump Interface controller PCB Terminal – (DHW Tank sensor – X9A) terminal (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board, please see Figures DN.2 & DN.3 below for reference.

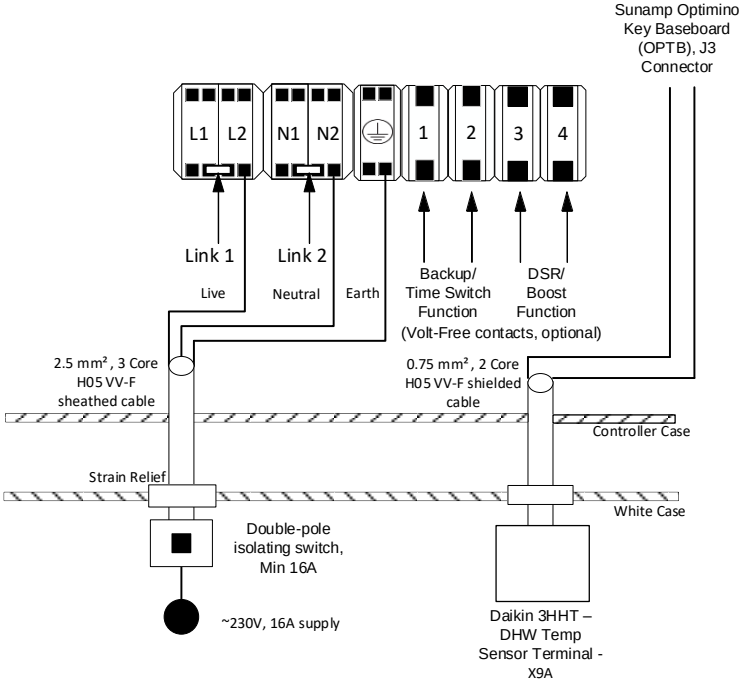


Figure DN.2 - Thermino xPlus with DN01 Optimino key

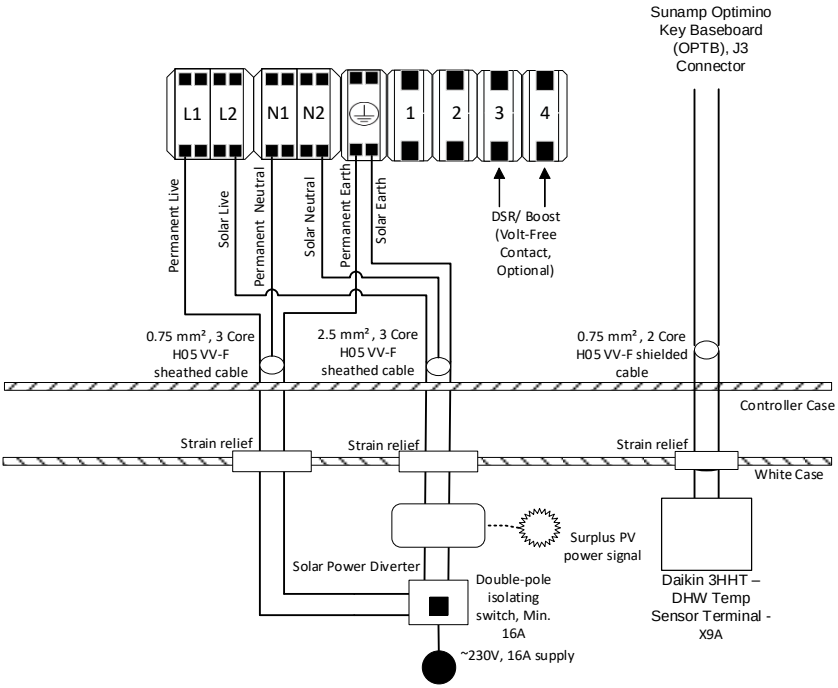


Figure DN.3 - Thermino xPlus with DN02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

DN.2 DAIKIN 3H HT HEAT PUMP CONTROLLER SETTINGS

In the Main menu on of the Hydromodule Controller, apply the following settings to the functions listed below:

Function	Setting
Tank mode:	On
DHW:	EKHWS/E Tank with booster heater installed at the side of the tank.
Emergency:	Auto SH reduced/ DHW off
Setpoint mode:	Fixed
Disinfection:	Disabled
Heat up mode:	Schedule Plus reheat (define this with end user, it is important to allocate a daily time window of 2 hours minimum if using schedule only)
Comfort setpoint:	69°C
Reheat setpoint:	50°C
DHW Hysteresis:	5°C
Target dT (Flow/ Return)	5°C

Table DN.1: Daikin 3H HT HP Hydromodule controller Main settings to apply

In the Field setting Menu on the Hydromodule controller, apply the following settings to the functions listed below:

Function	Setting
DHW Maximum setpoint [6-0E]	70°C

Table DN.2: Daikin 3H HT HP Hydromodule controller Field settings to apply

DN.3 WIRING APPLIED TO DAIKIN HYDROMODULE

- Jumper Terminal 10 to 11a on terminal bed X2M, using a 0.75mm² wire

ET- ECOFOREST ecoAIR & ecoGEO PRO R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "ET01" & "ET02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures ET.1 & ET.2 below)
- Heat Pumps from the Ecoforest ecoGEO & ecoAIR PRO range (R290)

ET.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump controller PCB Terminal – (AI1 – DHW Storage Temperature) (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board; please see Figures ET.1 & ET.2 below for reference.

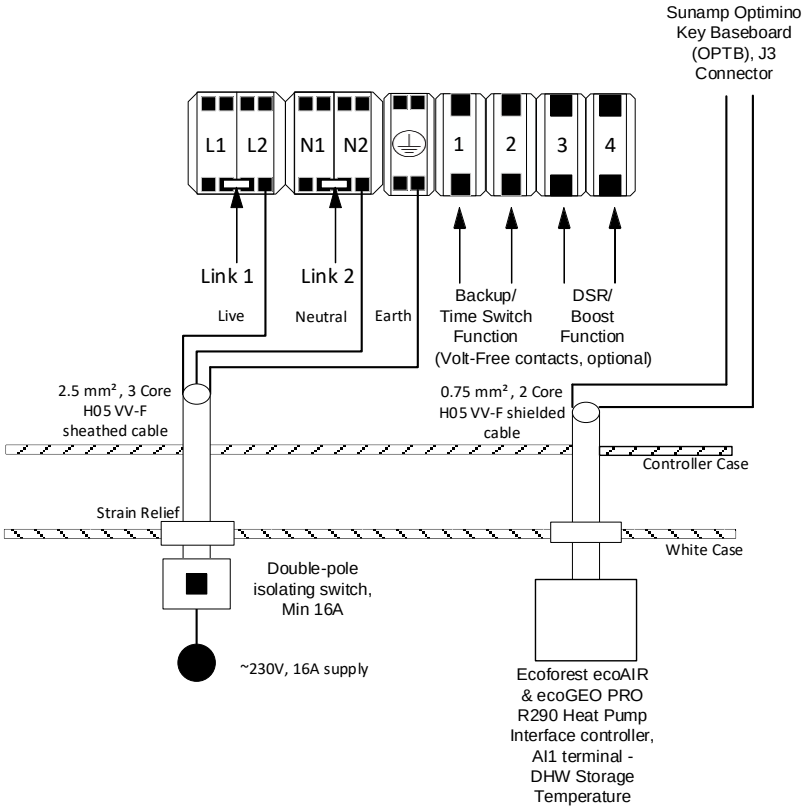


Figure ET.1 - Thermino xPlus with ET01 Optimino key

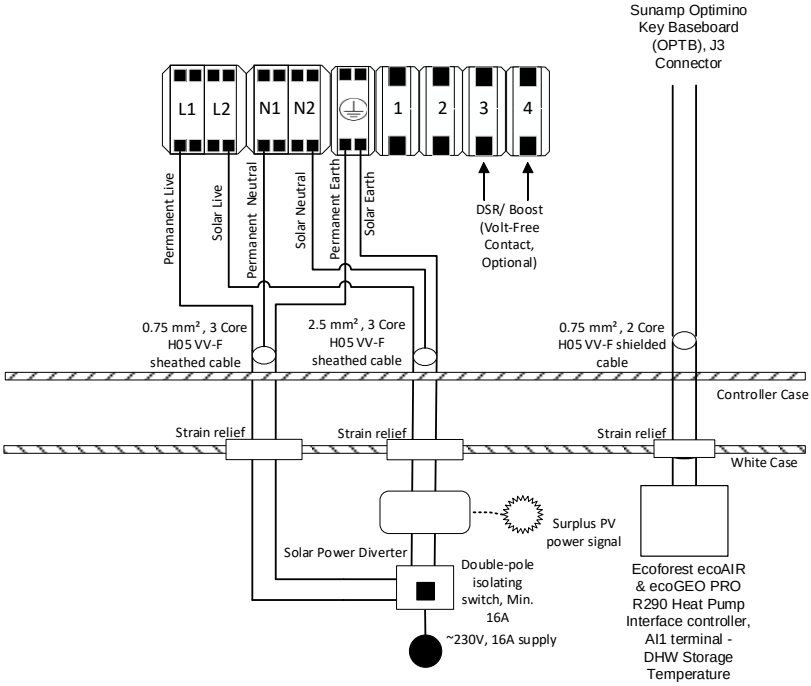


Figure ET.2 - Thermino xPlus with ET02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

ET.2 ECOFOREST ecoAIR & ecoGEO PRO (R290) CONTROLLER SETTINGS

On the Main Menu select "DHW/Legionella Protection Menu", then apply the following settings to the parameters detailed below:

Parameter	Setting
DHW	Enable
SetT	60°C
DTstart	5°C
Legionella	Disable

Table ET.1: Ecoforest DHW and Legionella settings to apply

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

ET.3 DEFROST MODE

On the Main Menu select "Defrosting". The default 'Defrosting By' mode is DHW; this **must** be changed to 'HEATING' to avoid excess cycling. The heating circuit must be designed accordingly.

Parameter	Setting
Enable	✓
Defrosting By	Heating
Stop T:	12°C
Max time	30 min

Table ET.2: Ecoforest defrost mode settings

HA – HISA HR290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "HA01" & "HA02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures HA.1 & HA.2 below)
- Heat Pumps from the HISA HR290 range.

HA.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the HISA DHW Sensor terminal T16 (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures HA.1 & HA.2 below for reference.

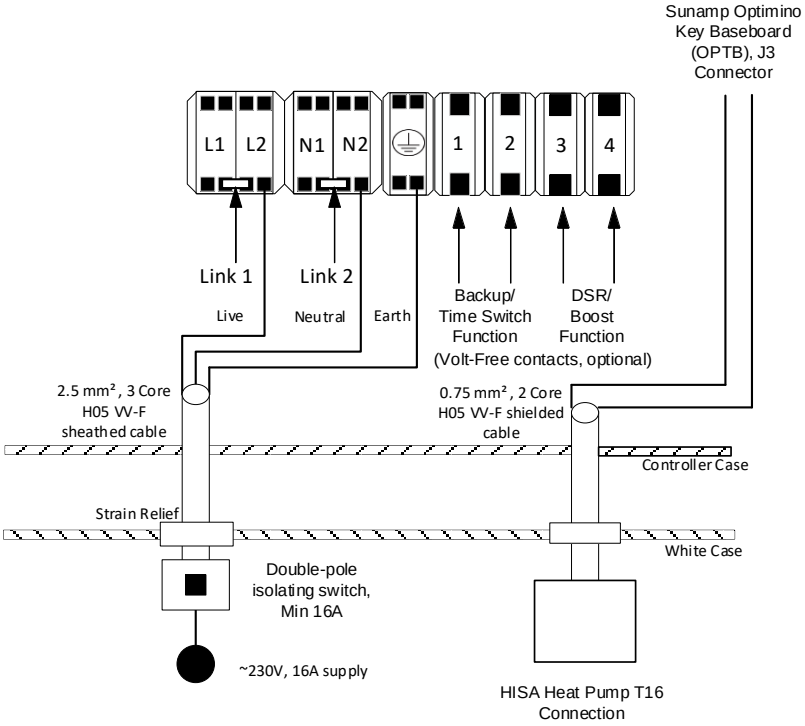


Figure HA.1 - Thermino xPlus with HA01 Optimino key

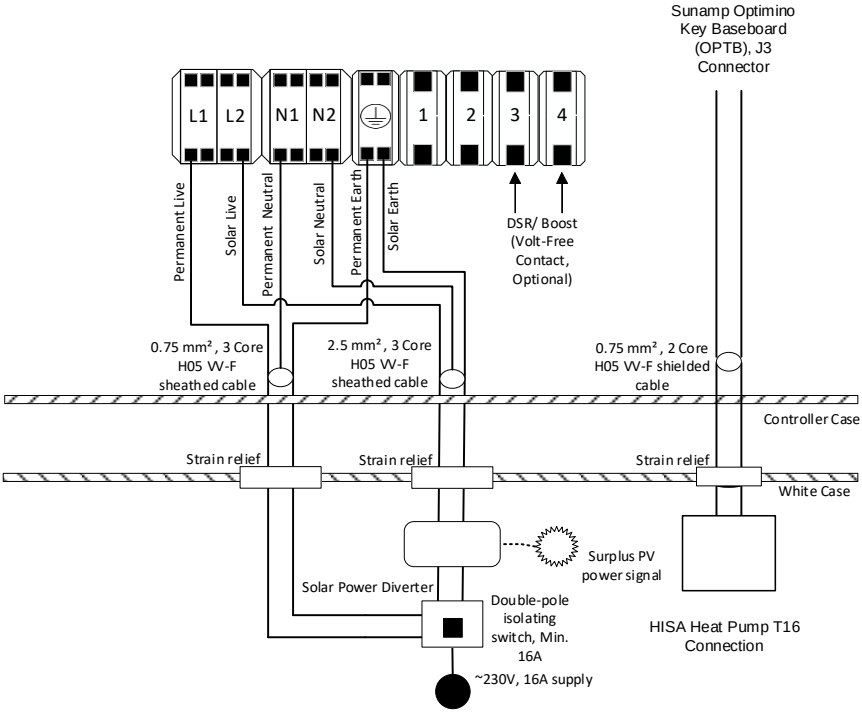


Figure HA.2 - Thermino xPlus with HA02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

HA.2 HISA HR290 INDOOR CONTROLLER SETTINGS

In the Main menu on of the HISA HR290 Indoor controller, apply the following settings to the functions listed below:

Function	Setting
DHW Set Temp	60°C

Table HA.1: HISA HR290 settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

IL – IDEAL HP290 R290 MONOBLOC HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "IL01" & "IL02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures IL.1 & IL.2 below)
- Heat Pumps from the Ideal HP290 Monobloc range.

IL.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Ideal Indoor Controller DHW Sensor terminal (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures IL.1 & IL.2 below for reference.

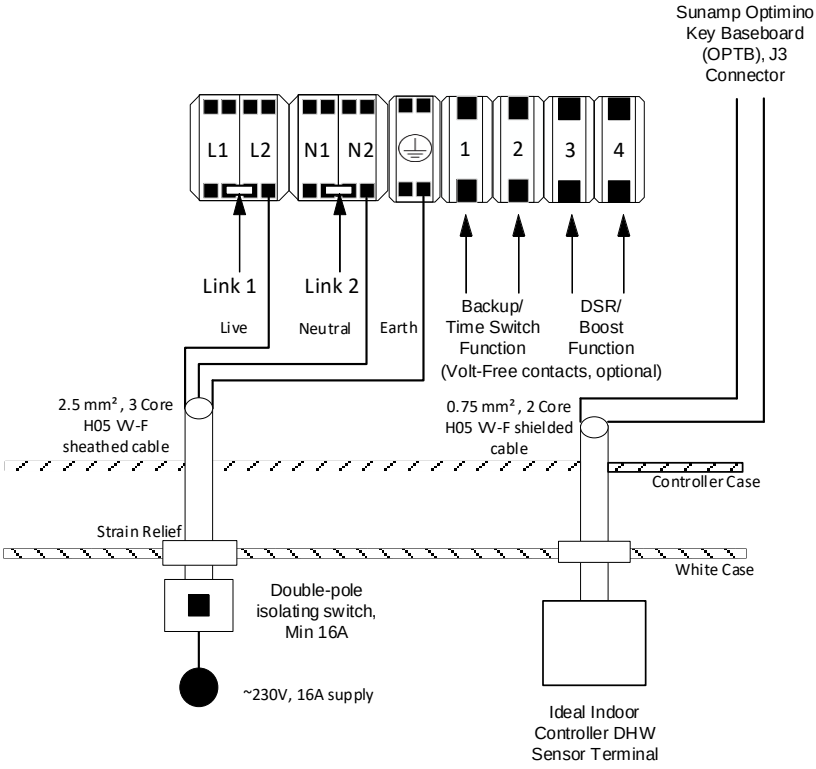


Figure IL.1 - Thermino xPlus with IL01 Optimino key

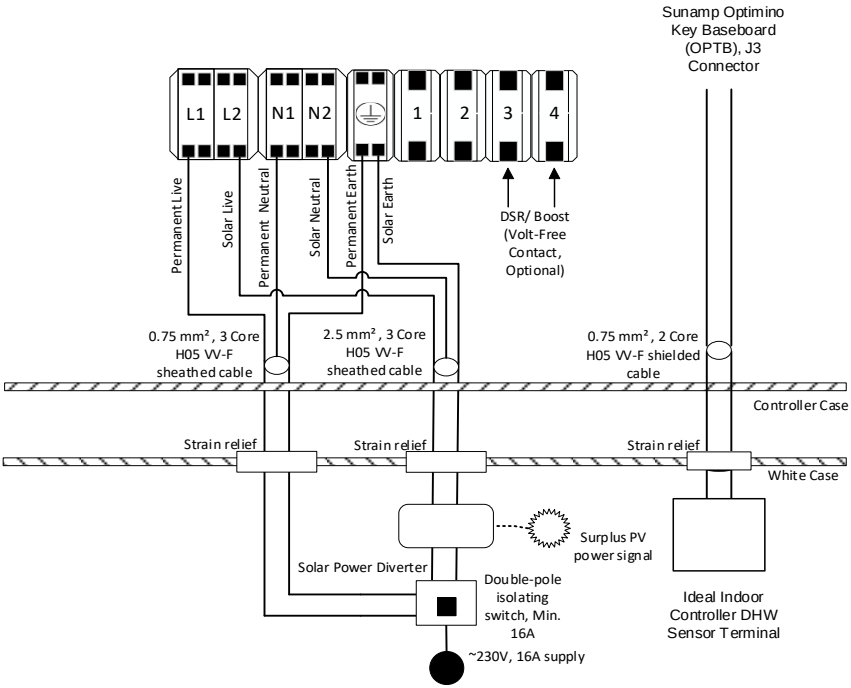


Figure IL.2 - Thermino xPlus with IL02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

IL.2 IDEAL HP290 INDOOR CONTROLLER SETTINGS

In the Main menu on of the Ideal HP290 Indoor controller, apply the following settings to the functions listed below:

Function	Setting
DHW Set Temp	60°C
Disinfect	Off
AHS	No
TBH	No

Table IL.1: Ideal HP290 settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

MA – MIDEA MHC R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "MA01" & "MA02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures MA.1 & MA.2 below)
- Heat Pumps from the Midea MHC R290 range.

MA.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – connector J3 into the Midea DHW Sensor T5/CN13 terminal (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures MA.1 & MA.2 below for reference.

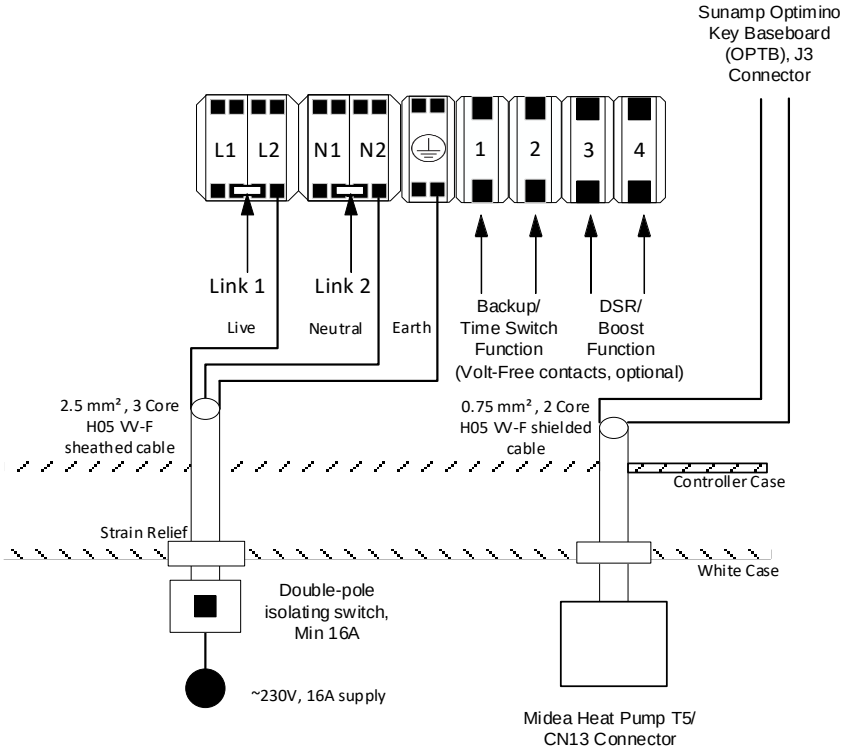


Figure MA.1 - Thermino xPlus with MA01 Optimino key

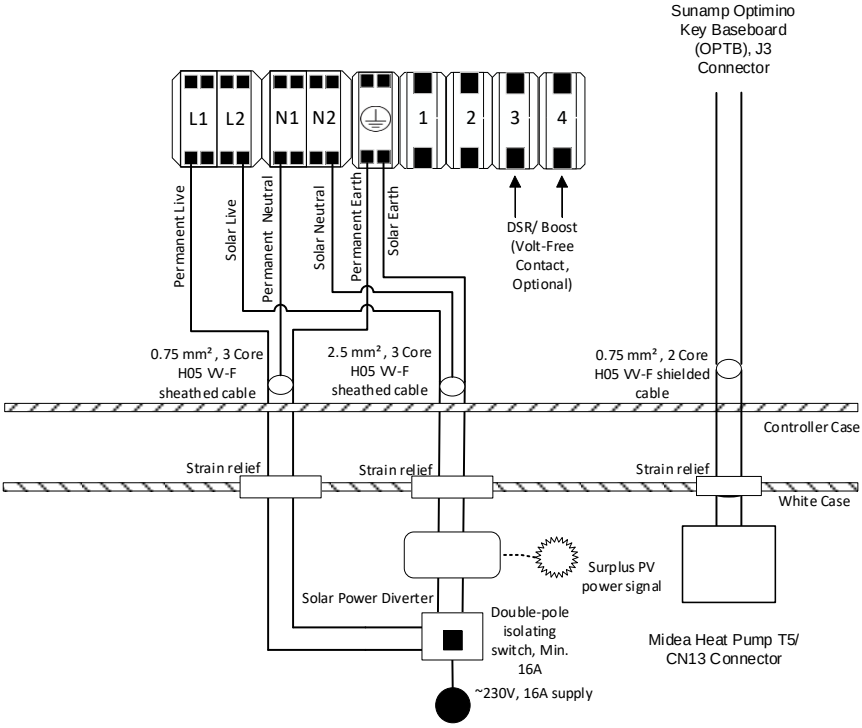


Figure MA.2 - Thermino xPlus with MA02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

MA.2 MIDEA MHC R290 INDOOR CONTROLLER SETTINGS

In the Main menu on of the Midea MHC Indoor controller, apply the following settings to the functions listed below:

Function	Setting
DHW Set Temp	60°C
Disinfect	Off

Table MA.1: Midea MHC R290 settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

MC - MITSUBISHI ELECTRIC PUZ-WZXXVAA R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "MC01" & "MC02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures MC.1 & MC.2 below)
- Heat Pumps from the Mitsubishi Electric PUZ-WZXXVAA R290 range

MC.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the THW5 connector at the Mitsubishi Electric FTC indoor unit (please refer to HP installation manual). The thermistor end must be removed to connect to the J3 terminal at the Optimino Board. Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into

the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures MC.1 & MC.2 below for reference.

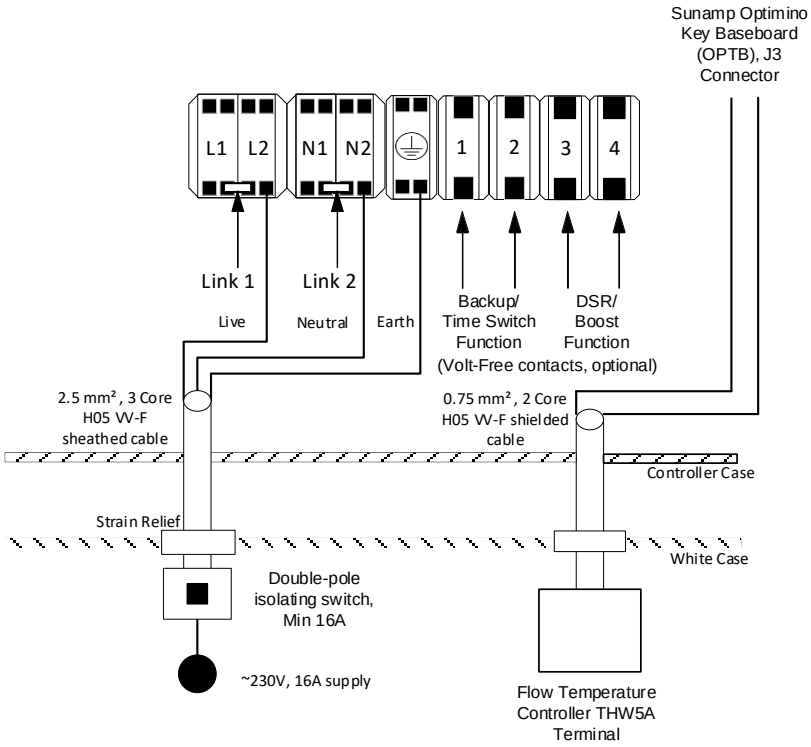


Figure MC.1 - Thermino xPlus with MC01 Optimino key

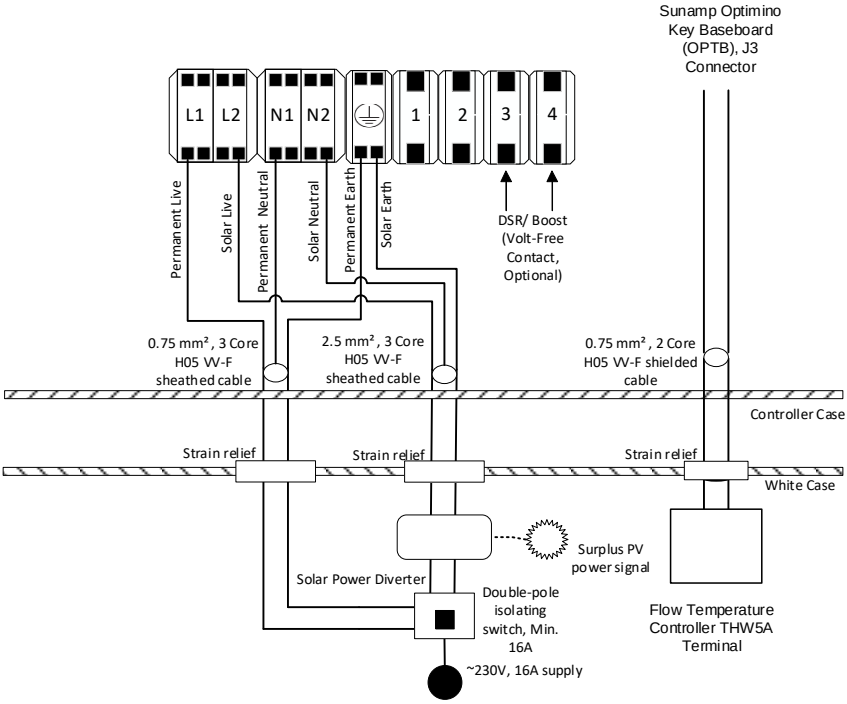


Figure MC.2 - Thermino xPlus with MC02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

MC.2 MITSUBISHI INDOOR CONTROLLER SETTINGS

In the Main menu on of the Mitsubishi Electric Remote Controller, apply the following settings to the functions listed below:

Function	Setting
DHW Set Temperature	65°C
Legionella Mode	Off

Table MC.1: Mitsubishi Indoor Controller Settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

NE – NIBE S2125 R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "NE01" & "NE02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures NE.1 & NE.2 below)
- Heat Pumps from the Nibe S2125 R290 range

NE.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the BT6 terminal at the Nibe SMO-S40 indoor controller (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures NE.1 & NE.2 below for reference.

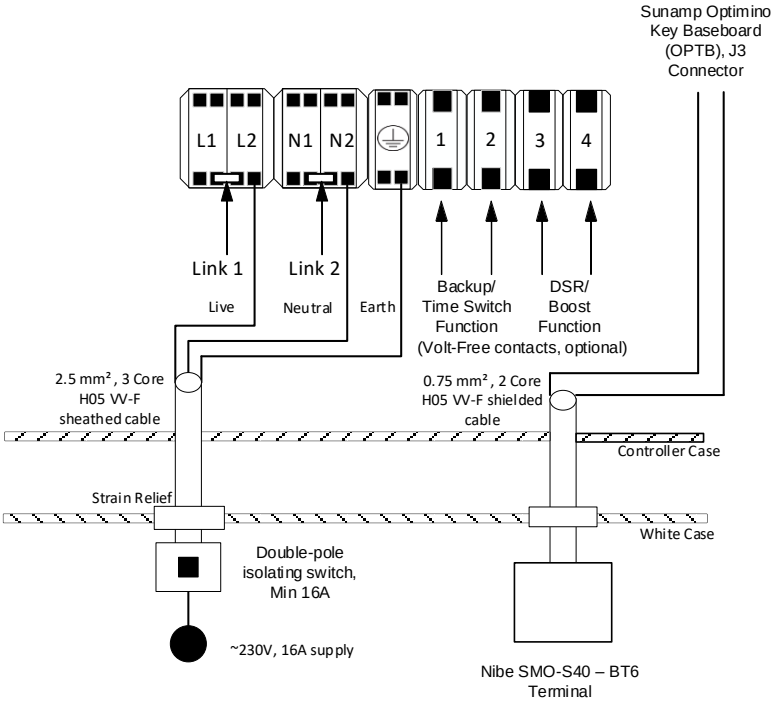


Figure NE.1 - Thermino xPlus with NE01 Optimino key

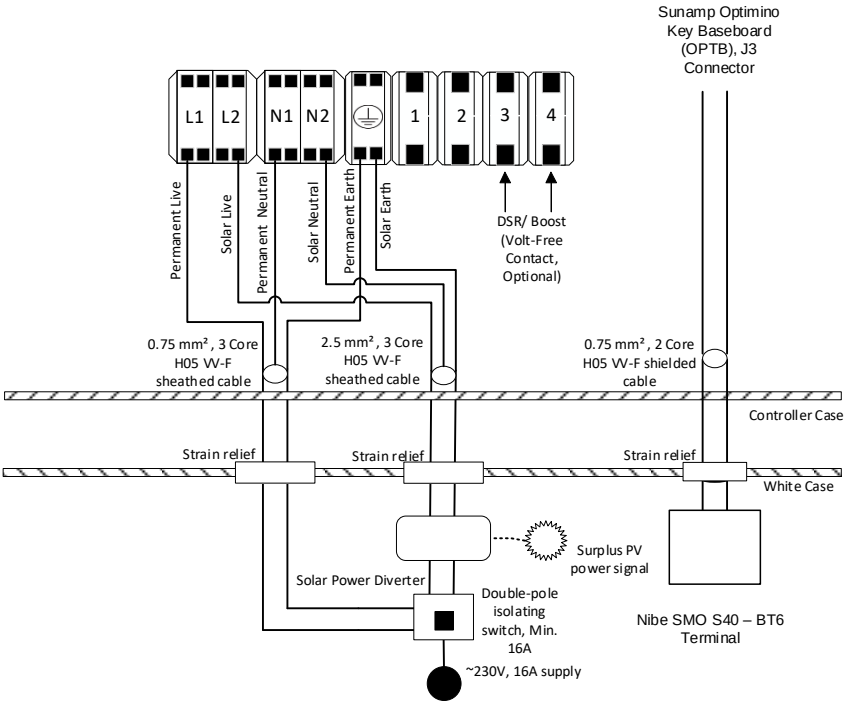


Figure NE.2 - Thermino xPlus with NE02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

NE.2 NIBE INDOOR CONTROLLER SETTINGS

In the Main menu on of the Nibe SMO-S40 Indoor Controller, apply the following settings to the functions listed below:

Menu Ref.	Function	Setting
2.2	Hot Water Demand	Medium
4.1	Operating Mode - Additional Heat	Disabled
7.1.1.1	Temperature Setting (Hot Water)	65°C
7.1.1.2	Charge Method	Target Temp

Table NE.1: Nibe Indoor Controller Settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

PC – PANASONIC L SERIES R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "PC01" & "PC02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures PC.1 & PC.2 below)
- Heat Pumps from the Panasonic L Series R290 Heat Pumps

PC.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Indoor Unit controller PCB Terminal – (Tank Sensor) (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board; please see Figures PC.1 & PC.2 below for reference.

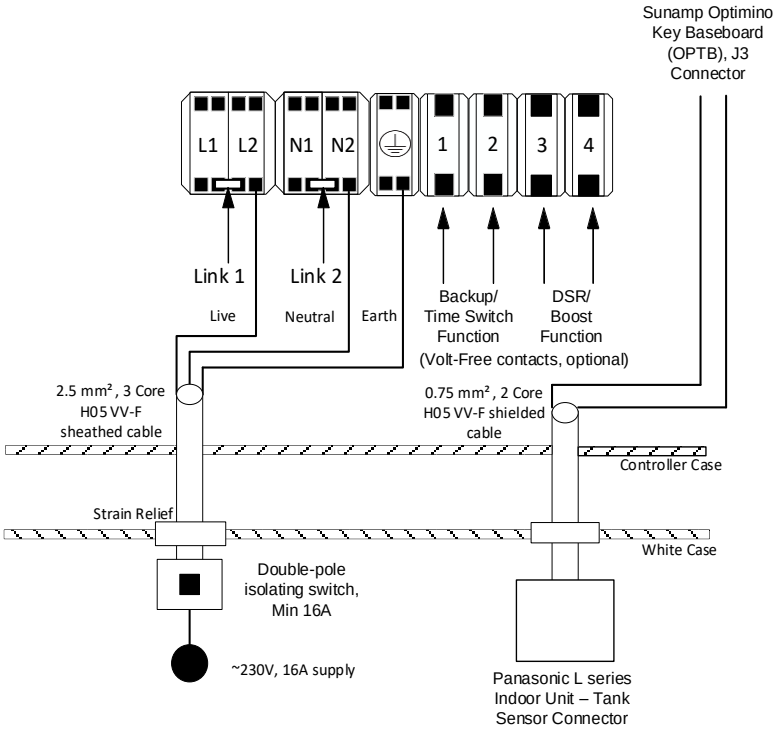


Figure PC.1 - Thermino xPlus with PC01 Optimino key

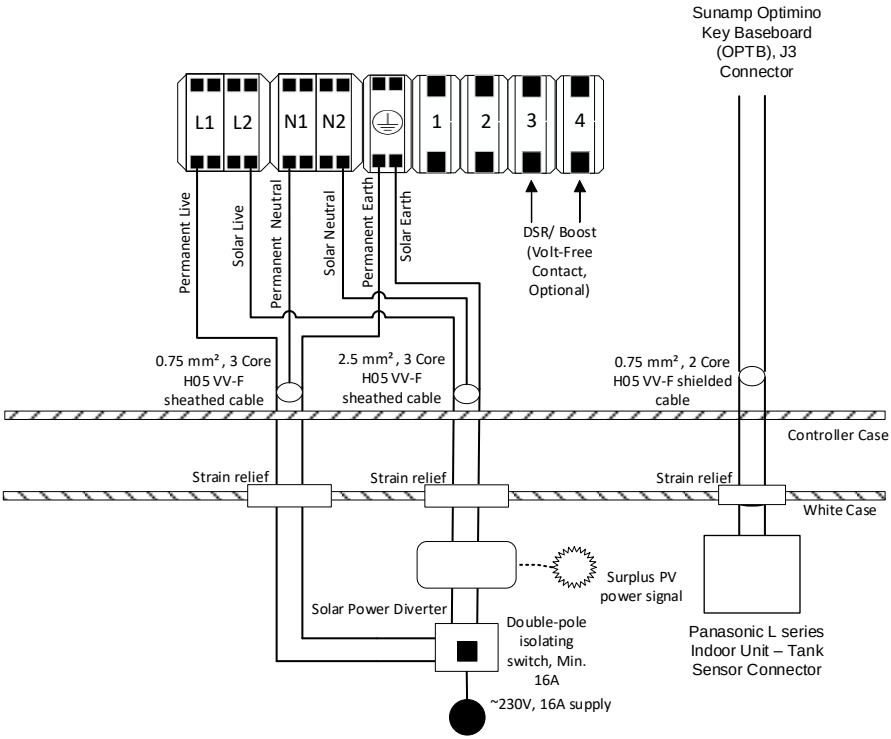


Figure PC.2 - Thermino xPlus with PC02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

PC.2 PANASONIC L SERIES R290 CONTROLLER SETTINGS

On the Panasonic L Series R290 Indoor unit controller, the following settings need to be applied:

Parameter	Setting
Tank Connection	Yes
DHW Capacity	Standard
DHW Set Temperature	55°C
Tank Reheat Temperature	8°C

Table PC.1 - Panasonic L Series R290 controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

PX – PHNIX GREENTHERM R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "PX01" & "PX02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures PX.1 & PX.2 below)
- Heat pump from the Phnix Greentherm R290 range

PX.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Interface controller PCB Terminal – (TT – DHW Temp Sensor) (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board, please see Figures PX.1 & PX.2 below for reference.

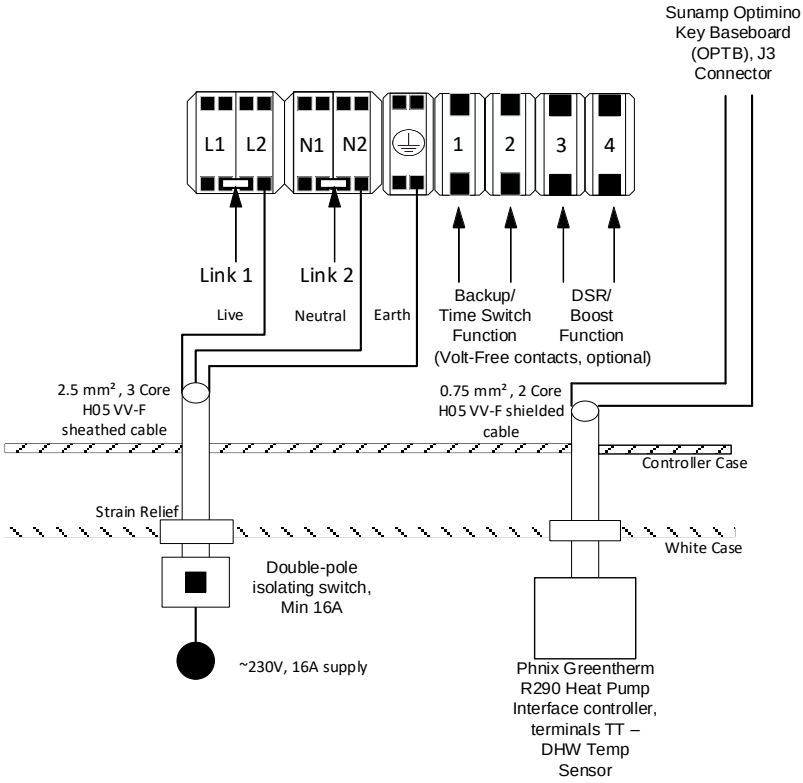


Figure PX.1 - **Thermino xPlus with PX01 Optimino key**

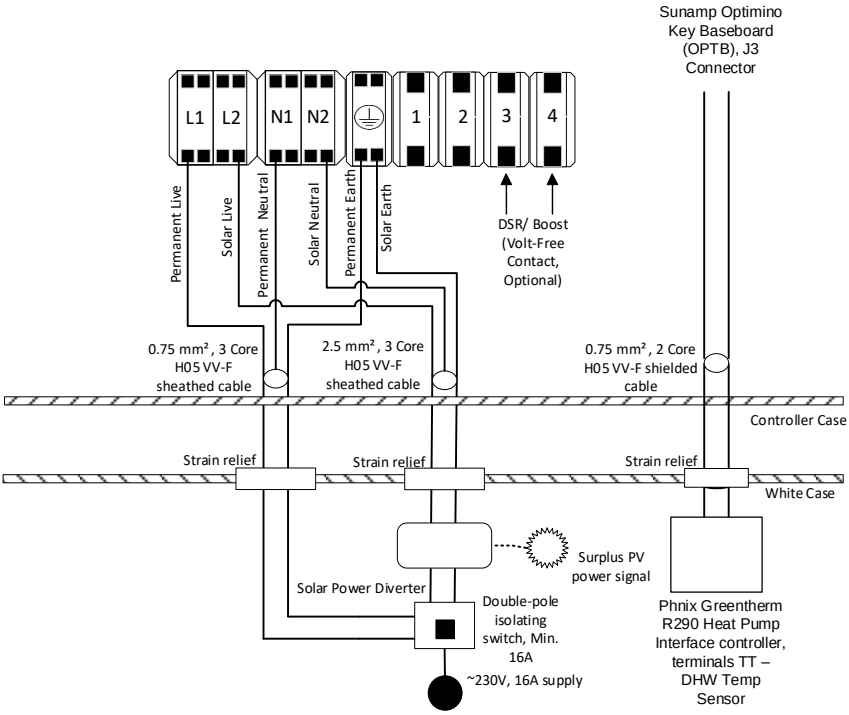


Figure PX.2 - Thermino xPlus with PX02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

PX.2 PHNIX GREENTHERM HEAT PUMP (R290) CONTROLLER SETTINGS

- On the Main Menu select "Mode". Select DHW from the Mode menu.
- Jumper the DHW terminals on the Heat Pump wiring terminals "5 & 6", "DHW ON/OFF".
- Unlock the screen to access the "Parameter" Menu. Please apply the following changes to the parameters:

Parameter Reference & Description	Parameter Values
H01 - AutoStart	YES
R01 – Hot Water Setpoint	55°C
R16 - Power-on Return Difference of Tank Water	5°C
R17 – Standby Temp Difference of Tank Water	5°C
R37 – Max Hot Water Setpoint	70°C

Table PX.1: Phnix Greentherm HP controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

SG – SAMSUNG HTQ R32 & SAMSUNG EHS MONO R290 HEAT PUMPS

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "SG01" & "SG02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures SG.1, SG.2, SG.3 & SG.4 below)
- Heat Pumps from the Samsung HTQ R32 and Samsung EHS Mono R290 range

SG.1 SAMSUNG HTQ R32 HEAT PUMP

NOTICE

Please note that the Samsung HTQ R32 heat pump range may not be able to fully charge Thermino xPlus Heat Batteries under all conditions. The use of the automated back-up heating function may be required to reach full charge. This requires the installation of a jumper cable (Link 3) to be placed between FT and 0V at connection J3 on the main controller PCBA. This will activate a 45-minute timer during which the HP will operate, followed by the HP switching OFF and the back-up heating element coming ON (after a 5-minute timer) to complete charging the Heat Battery to full charge.

NOTICE

Installing Link 3 will activate the backup heating element inside the Heat Battery after a 45-minute timer. Please note that this will stop the Heat Battery being charged in Heat Pump mode. This can lead to increased electricity consumption, resulting in higher energy costs. This should be explained to the end user.

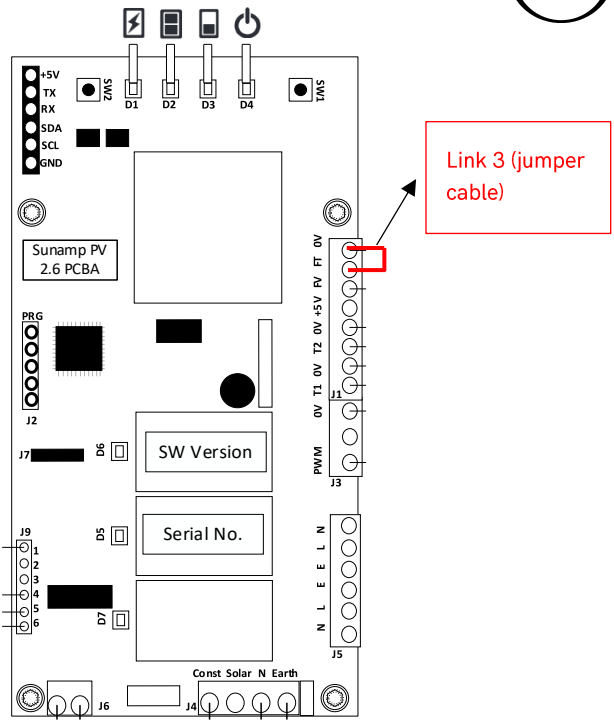


Figure SG.1 – Link 3 installed between FT and 0V at connection J3 on the controller PCBA

SG.1.1 WIRING

Using the Samsung Tank sensor part supplied with the heat pump, remove the sensor end by cutting off the copper cylinder, and strip the wire as required. The cable will act as a hot water heating tank sensor from the Sunamp Optimino key baseboard (OPTB) – terminal J3 into the Heat Pump Interface controller PCB Terminal – (DHW Tank sensor - CNS042) terminal (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the

cables in terminals J3 on the Optimino Board, please see Figures SG.1 & SG.2 below for reference.

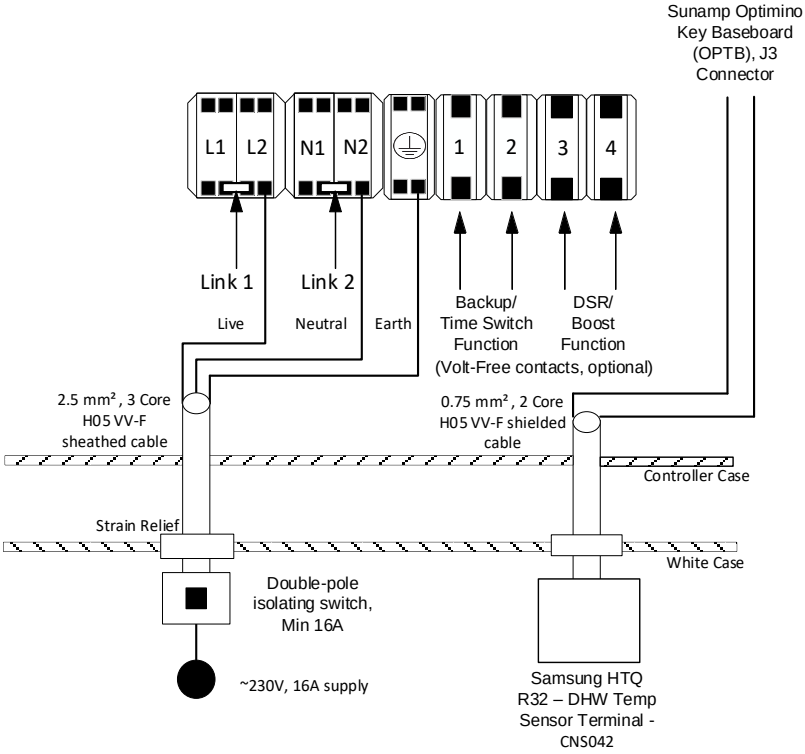


Figure SG.1 - Thermino xPlus with SG01 Optimino key

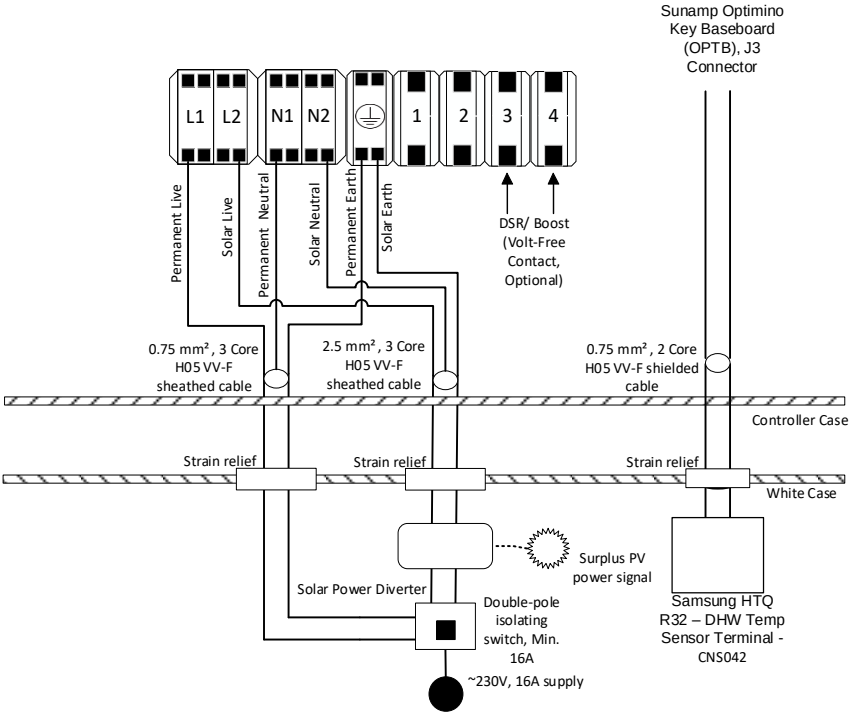


Figure SG.2 - Thermino xPlus with SG02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

SG.1.2 SAMSUNG HTQ R32 HEAT PUMP CONTROLLER SETTINGS

On the Main Menu of the Heat Pump Controller, ensure "DHW Mode" setting "Standard" is applied.

The following can be accessed in the "FSV" Menu. Please enter the code detailed in the Samsung HTQ R32 manual if required to access the menu:

FSV	Setting
3011 – DHW Application	USE
3021 – Max Temp	55°C
3025 – Max DHW Operation Time	95 mins
1051 – DHW Tank Temperature	70°C

Table SG.1: Samsung HTQ R32 HP controller settings

SG.2 SAMSUNG EHS MONO R290 HEAT PUMP

SG.2.1 WIRING

Using the Samsung Tank sensor part supplied with the heat pump, remove the sensor end by cutting off the copper cylinder, and strip the wire as required. The cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Samsung heat pump CNS042 terminal (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board; please see Figures SG.3 & SG.4 below for reference.

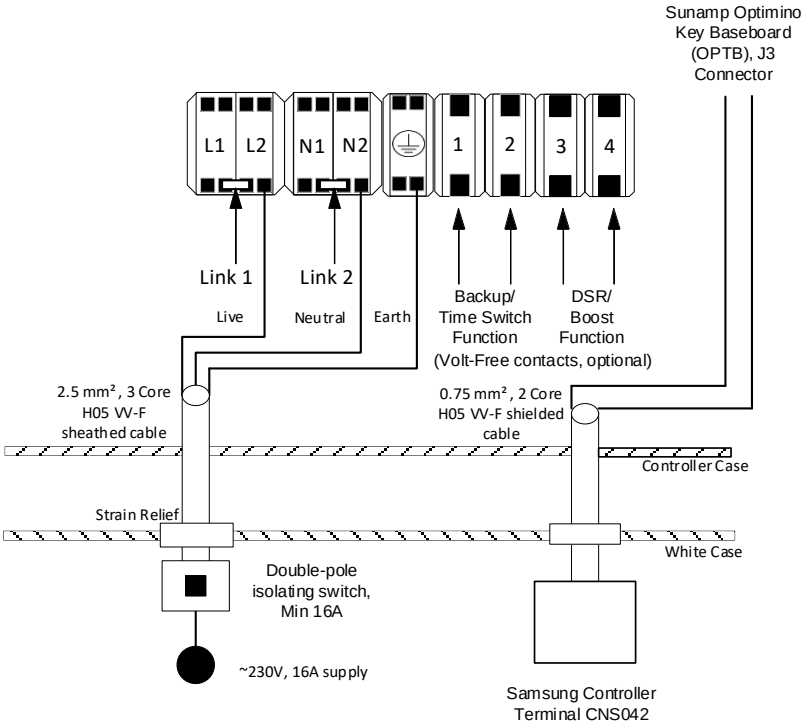


Figure SG.3 – Thermino xPlus with SG01 Optimino key

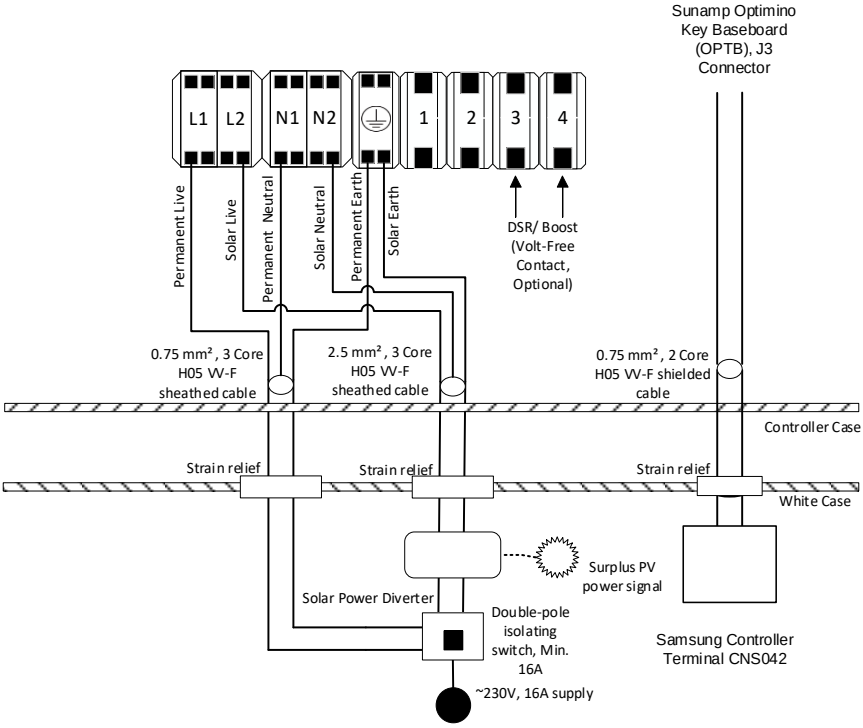


Figure SG.4 - Thermino xPlus with SG02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads

SG.2.2 SAMSUNG EHS MONO R290 CONTROLLER SETTINGS

In the Main menu on of the Samsung controller, apply the following settings to the functions listed below:

Function	Setting
DHW Application	Use
Booster Heater	Not Use
Max DHW Time	95 Mins
Disinfection	Not Use
DHW Set Temperature	65°C

Table SG.1: Samsung Controller Settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

SL – STIEBEL ELTRON WPL-A 07 HK 230 PREMIUM R454C HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "SL01" & "SL02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures SL.1 & SL.2 below)
- Stiebel Eltron WPL-A 07 HK 230 Premium R454C Heat Pump

SL.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Interface controller (WPM) PCB Terminal X1.8 (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board J3; please see Figures SL.1 & SL.2 below for reference.

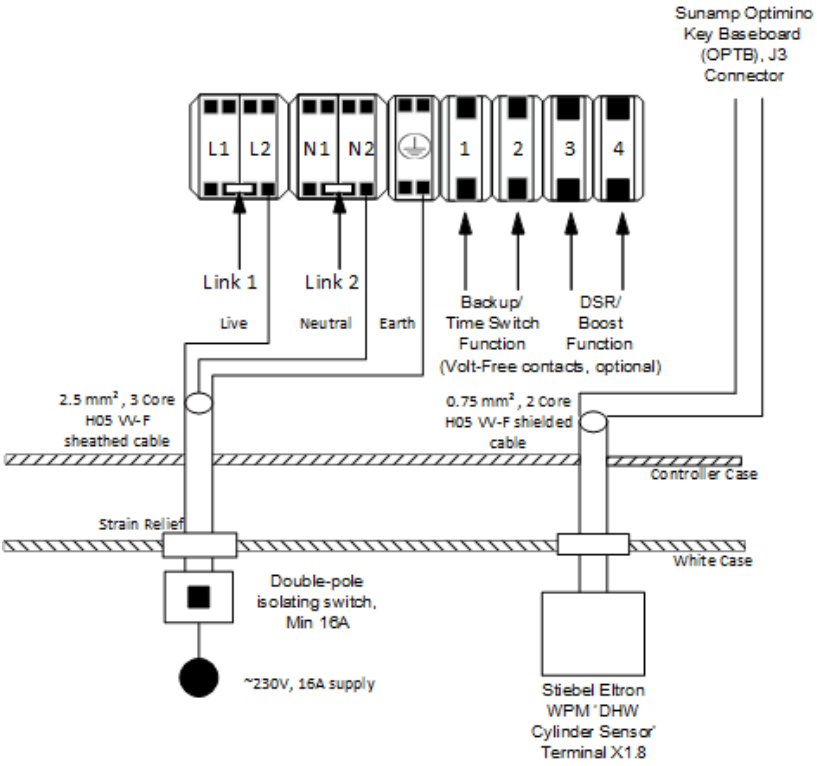
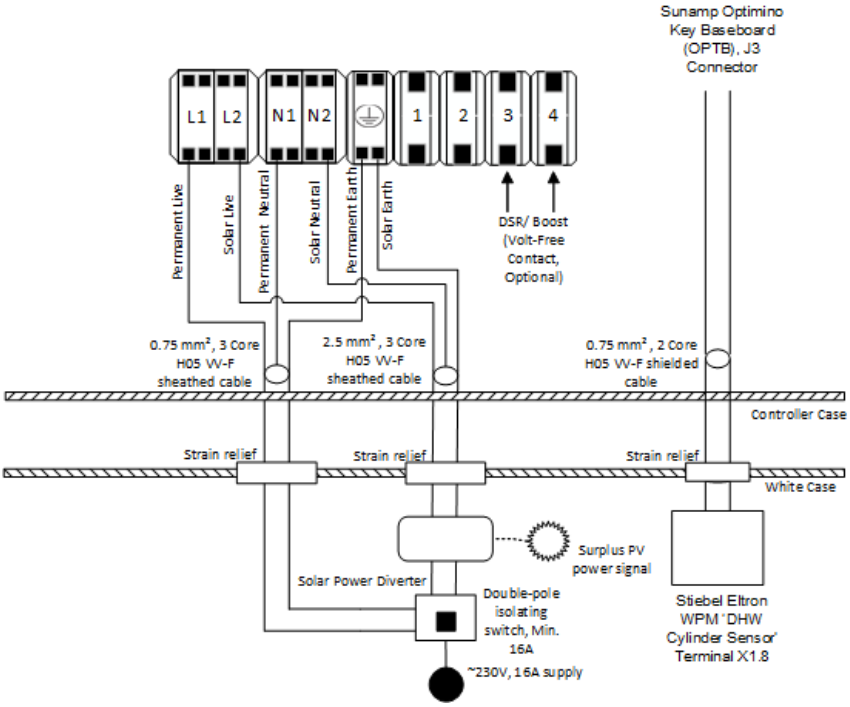


Figure SL.1 - Thermino xPlus with SL01 Optimino key



SL.2 - Thermino xPlus with SL02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

SL.2 STIEBEL ELTRON WPL-A-07 HK 230 PREMIUM HEAT PUMP (R454C) CONTROLLER SETTINGS

- Jumper both terminals on X2.2 at the Heat Pump controller (WPM) then place an additional jumper wire between the first terminal at X2.2 and the second terminal at X2.1. This allows a power supply to the pump on the DHW circuit.
- On the Heat Pump controller (WPM), under DHW Settings, please apply the following changes to the parameters:

Parameter Reference & Description	Parameter Values
DHW Comfort Temperature	55°C
DHW Hysteresis	5K

Table SL.1: Stiebel Eltron WPL-A-07 HK 230 Premium (R454C) controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

TI – TONGYI R290 INVERTER SERIES "TAHMV-R"

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "TI01" & "TI02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures TI.1 & TI.2 below)
- Heat pumps from Tongyi R290 Inverter TAHMV-R range

TI.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) (please note that the DHW sensor provided with the heat pump might need to be used, by cutting off the copper end to allow the wires to be inserted in the Sunamp Optimino Board (OPTB) – terminal J3, into the Heat Pump Interface controller PCB Terminal – (A16B – DHW Temp Sensor) (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the

appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals J3 on the Optimino Board J3; please see Figures TI.1 & TI.2 below for reference.

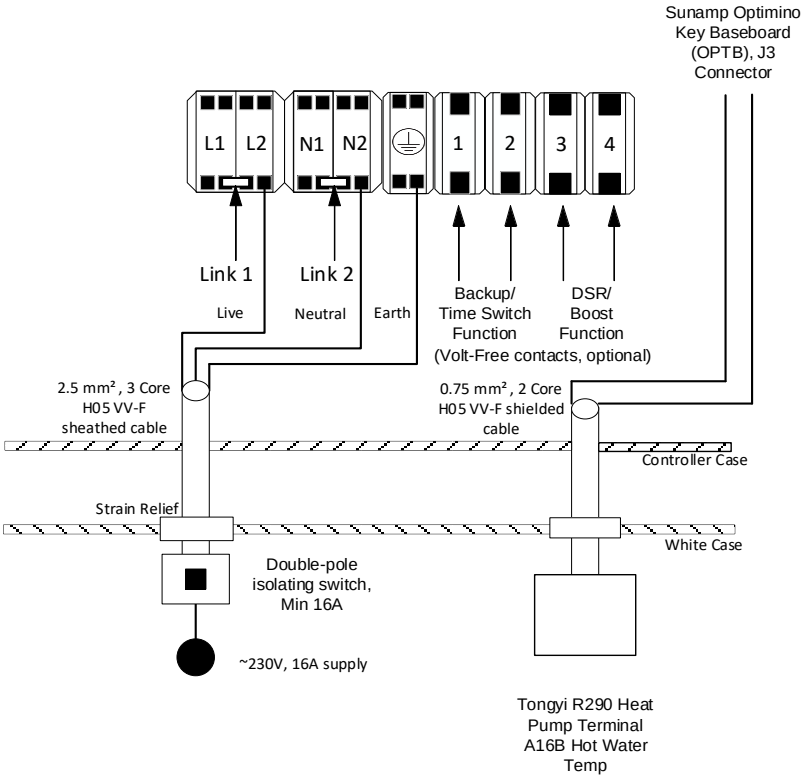


Figure TI.1 - Thermino xPlus with TI01 Optimino key

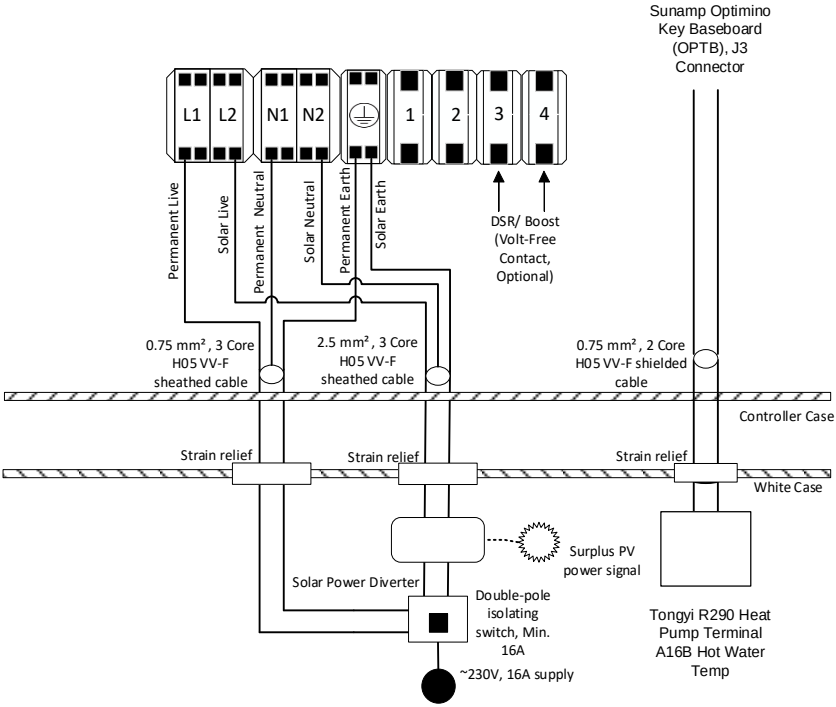


Figure TI.2 - Thermino xPlus with TI02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

TI.2 TONGYI TAHMV-R HEAT PUMP (R290) CONTROLLER SETTINGS

Please apply the following settings to the Tongyi TAHMV-R R290 Heat Pump controller:

Setting Name	Setting
Hot Water Set Temp	60°C
Pump Run Mode*	Reach.T.on.off

Table TI.1: Tongyi TAHMV-R Heat Pump (R290) controller settings

***Note**: This parameter is accessed via the "Advanced Setting" Menu, (please refer to HP installation manual).

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

TO - TRIANCO ACTIVAIR HT R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "TO01" & "TO02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures TO.1 & TO.2 below)
- Heat pumps fromTrianco Activair HT R290 range

TO.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Interface controller PCB Terminal – (TT – DHW Temp Sensor) (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board J3; please see Figures TO.1 & TO.2 below for reference.

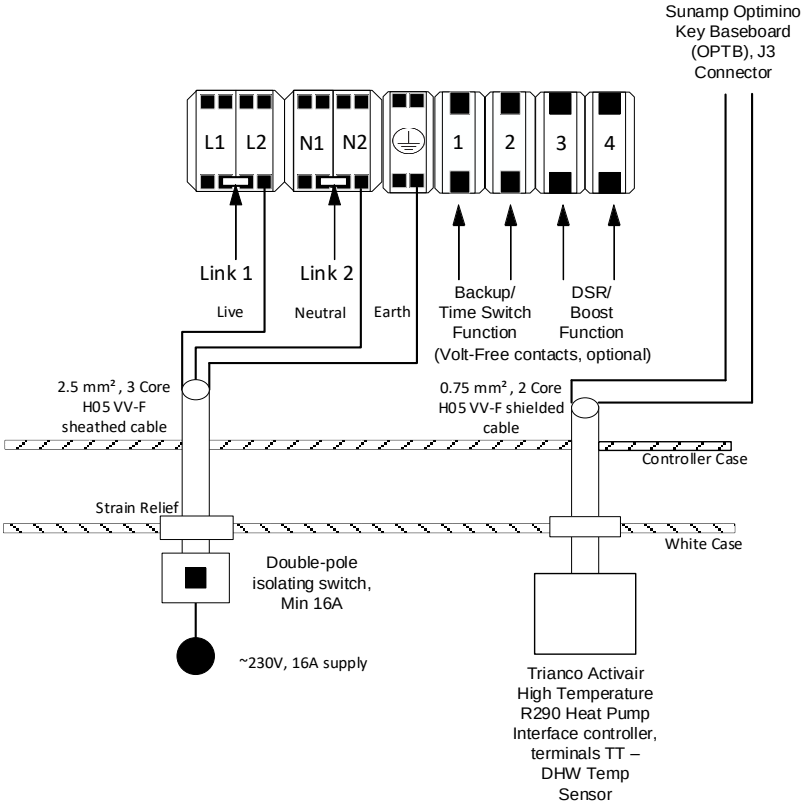


Figure TO.1 - Thermino xPlus with TO01 Optimino key

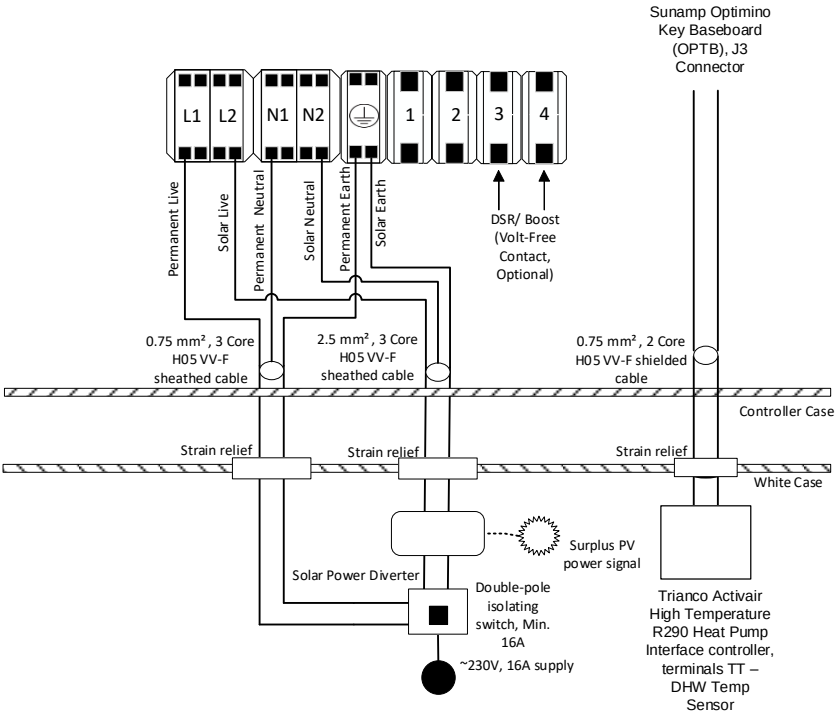


Figure TO.2 - Thermino xPlus with TO02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084: (https://www.sunamp.com/downloads)

TO.2 TRIANCO ACTIVAIR HIGH TEMPERATURE HEAT PUMP (R290) CONTROLLER SETTINGS

- On the Main Menu select “Mode”. Select DHW from the Mode menu.
- Jumper the DHW terminals on the Heat Pump wiring terminals “5 & 6”, “DHW ON/OFF”.
- Unlock the screen to access the “Parameter” Menu. Please apply the following changes to the parameters:

Parameter Reference & Description	Parameter Values
H01 - AutoStart	YES
R01 – Hot Water Setpoint	55°C
R16 - Power-on Return Difference of Tank Water	5°C
R17 – Standby Temp Difference of Tank Water	5°C
R37 – Max Hot Water Setpoint	70°C

Table TO.1: Trianco Activair High Temperature HP (R290) controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

VN – VIESSMANN VITOCAL R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "VN01" & "VN02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures VN.1 & VN.2 below)
- Heat Pumps from the Viessmann Vitocal R290 range

VN.1 WIRING

Using a 2-core shielded cable 0.75mm^2, the cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into terminals 9 & 10 of the 6-pole connector at the Viessmann indoor unit (please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the cables in terminals

J3 on the Optimino Board; please see Figures VN.1 & VN.2 below for reference.

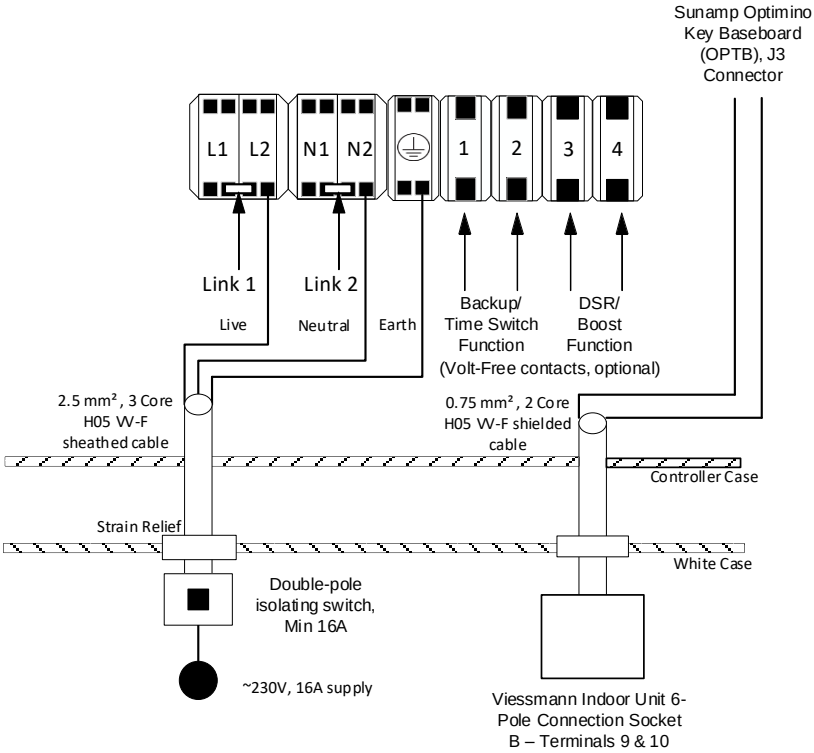


Figure VN.1 - Thermino xPlus with VN01 Optimino key

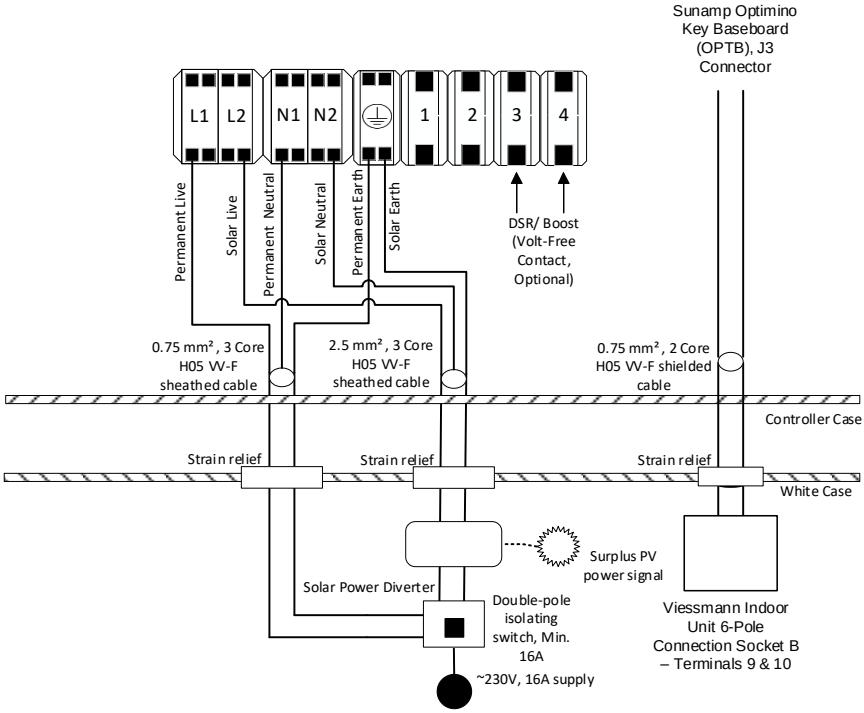


Figure VN.2 - Thermino xPlus with VN02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads

VN.2 VIESSMANN INDOOR CONTROLLER SETTINGS

In the Main menu on of the Viessmann Indoor Controller, apply the following settings to the functions listed below:

Function	Setting
DHW	Cylinder w/ 1 Sensor
External Heat Generator	Not Available
Electric Booster Heater	Not Available
DHW Set Temperature	60°C
Scald Protection*	OFF

Table VN.1: Viessmann Indoor Controller Settings

*** Ensure that a Thermostatic Mixing Valve (TMV) is installed at the outlet of the Thermino, as per the installation manual, to protect against the risk of scalding.**

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window inline with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

VT - VAILLANT AROTHERM + R290 HEAT PUMP

WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.
Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the "VT01" & "VT02" Optimino keys (D0084 – Section 6.4.2 for wiring instructions & Figures VT.1 & VT.2 below)
- Heat Pumps from the Vaillant Arotherm + range (R290)

VT.1 WIRING

Using a 2-core shielded cable 0.75mm^2. The cable will act as a hot water heating tank sensor from the Sunamp Optimino Board (OPTB) – terminal J3 into the Heat Pump Interface controller PCB Terminal – (SP1 – screw terminals 1 & 2) (please refer to HP installation manual). Please run the wire into the Heat Battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the

cables in terminals J3 on the Optimino Board, please see Figures VT.1 & VT.2 below for reference.

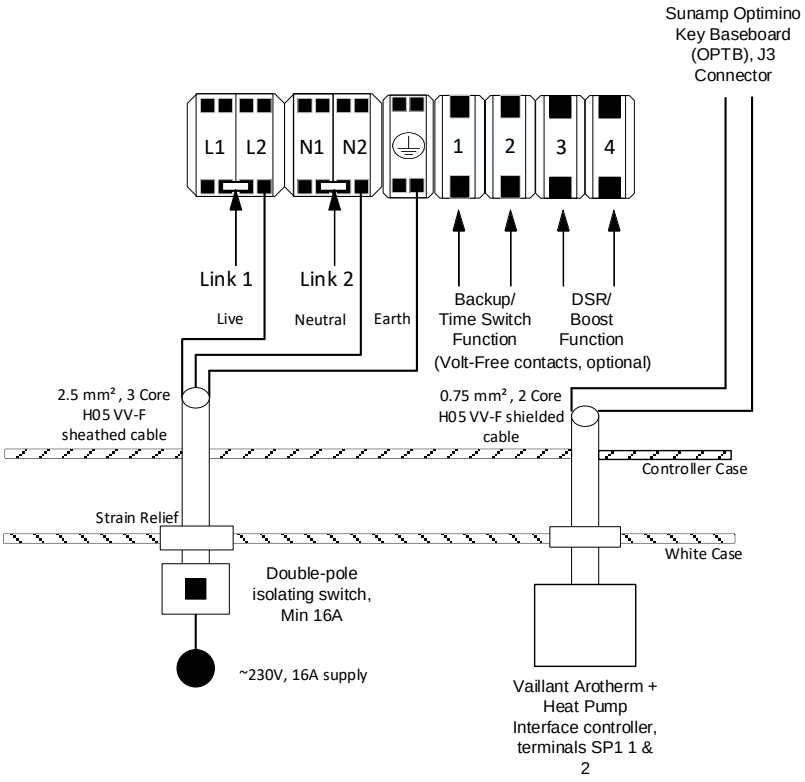


Figure VT.1 - Thermino xPlus with VT01 Optimino key

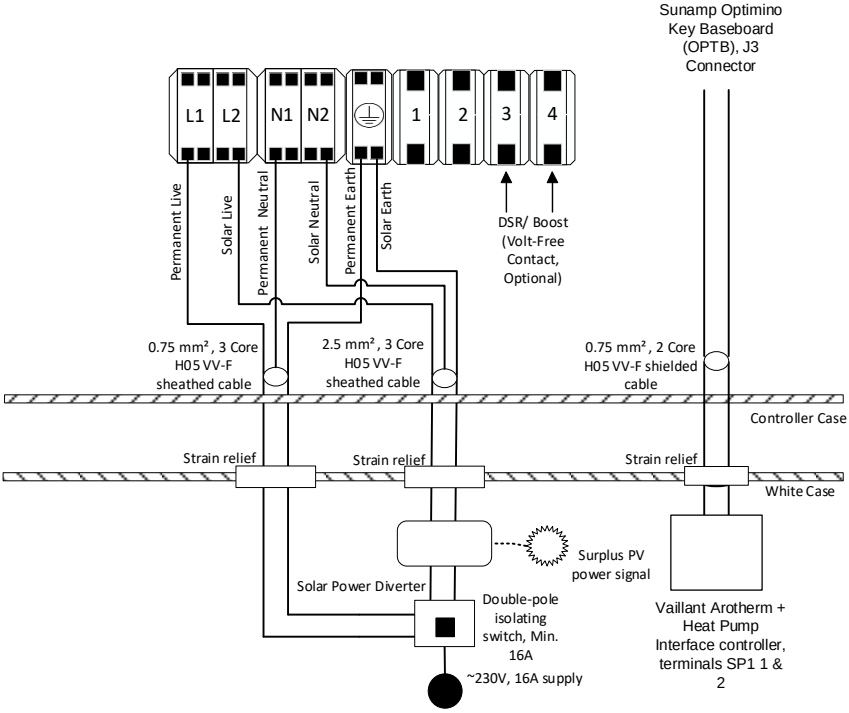


Figure VT.2 - Thermino xPlus with VT02 Optimino key

NOTICE

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:
(https://www.sunamp.com/downloads)

VT.2 VAILLANT AROTHERM + R290 HEAT PUMP SENSOCOMFORT CONTROLLER SETTINGS

In the Installer level menu on the Vaillant Sensocomfort controller, please apply the following settings for DHW settings ONLY (please check Vaillant Arotherm Plus Sensocomfort installation and user manual):

Setting	Value required
Max cylinder charging time	120 minutes
Cylinder charging anti-cycling time: min	Minimum setting
DHW target temperature	70°C
Cylinder charging hysteresis	5K
Cylinder charging offset	5K
Anti-legionella. Day & time	OFF

Table VT.1: Vaillant Arotherm + R290 HP Sensocomfort controller settings

NOTICE

If following a DHW daily timed schedule, please ensure that a minimum time window in line with the installed Heat Battery and Heat Pump capacities is chosen, and that potential defrost cycles during this window are accounted for.

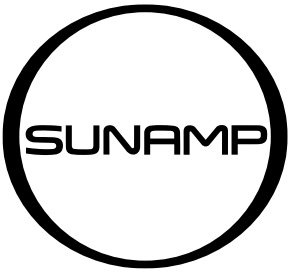
VT.3 VAILLANT AROTHERM + R290 HEAT PUMP INTERFACE SETTINGS

Change Heat pump Compressor output in DHW mode from Eco to Normal. This is available in the DHW settings of the Heat Pump Interface (please check Vaillant Arotherm Plus installation and user manual).

4. APPENDIX

The purpose of this appendix is to enumerate the heat pump manufacturers, heat pump models and the test dates. Please note that all recommended settings, integration and compatibility relate to the product and firmware version at the time of testing. Please see table below for more information:

Manufacturer	Heat Pump Name/Model	Date of Test
Amitime	R290 9kW, PAVH-08V1GFB	07/08/24
Bosch	Compress 5800i AW R290 7kW, 7 OR-S	06/06/24
Daikin	Altherma 3H HT R32 8kW, EDLA08 R32	17/01/23
Ecoforest	ecoAIR PRO 1-7kW	14/12/22
Hisa	R290 Monobloc 8kW, HR290-008-1PH	17/10/24
Ideal	HP290 R290 Monobloc 4.5kW	31/07/24
Midea	MHC R290 8kW, MHC-V8WD2N7	14/10/24
Mitsubishi	Mitsubishi Electric PUZ-WZXXVAA 8kW R290	03/03/2025
Nibe	Nibe R290 5kW, S2125-8	24/01/25
Panasonic	L-series R290 7kW, WH-WDG07LE5	02/04/24
Phnix	Greentherm Series R290, PASRW040-BP-PS-D	06/12/22
Samsung	HTQ R32 8kW, AE08-8BXYDEG	18/01/23
Samsung	EHS Mono R290 5kW, AE050CXYBEK	22/08/24
Stiebel Eltron	WPL-A-07 HK 230 Premium R454C 7kW	13/06/24
Tongyi	R290 Inverter series 9kW, TAHMV9-R	07/05/24
Trianco	Activair HT R290	07/12/22
Viessmann	Vitocal 150-A R290 8kW	13/08/24
Vaillant	Arotherm+ R290 12 kW	09/12/22



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